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AUTHOR Ryan, T. Antoinette
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ABSTRACT

The model for career education implementation defines three major functions which constitute the essential elements in the implementation process: planning, implementation, and evaluation. Emphasis is placed on the interrelatedness of implementation to both planning and evaluation of career education. The 11 subsystems involved in implementing career education are discussed: establish conceptual framework to conduct public relations/information service; establish enabling legislation/set policy; allocate/provide funds; establish advisory committee/organize staff; arrange community participation; arrange institutional participation; scheduling time; develop program guide; recruit/select/develop staff; develop/obtain software/hardware; and arrange facilities/sites. The initiation of the career education delivery system is concerned primarily with the pilot test and field test. To maintain the system, there must be a closed loop from system operation to evaluation to provide continuous feedback and direct adjustments in the operating system. The model assumes a foundation of local initiative fostered and reinforced at regional and national levels. (Author/EC)

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A MODEL FOR IMPLEMENTING A CAREER EDUCATION SYSTEM

T. Antoinette Ryan
Researcher/Professor
University of Hawaii
Honolulu, Hawaii

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A MODEL FOR IMPLEMENTING A CAREER EDUCATION SYSTEM

T. Antoinette Ryan

University of Hawaii

Abstract

A model for implementation of a career education delivery system is presented. The three major elements in the delivery system are defined, and the relationships among the planning, implementing, and evaluating activities are pointed out. The implementation function is analyzed, and each of the eleven subsystems involved in implementing career education is considered.

Elements in a Career Education Delivery System

Career education refers to the process of systematically providing experiences of awareness, exploration, and preparation, together with placement and follow-up activities, to facilitate and contribute to the optimum development of the individual with implementation of the person's occupational roles in a healthy self-concept. A system is an organization or structure of an orderly whole made up of interacting and interrelated elements or functions working together for the purpose of accomplishing a predetermined mission (Ryan, 1974). Three major functions must be carried out in the process of providing career education to any group of individuals, regardless of setting. These functions, constituting the necessary elements for delivery of career education, are: planning, implementation, and evaluation.

Planning is concerned with assessing needs, articulating goals, subgoals, and objectives, producing possible strategies for achieving the performance objectives, evaluating the alternatives, and selecting the best possible strategy. In planning career education, analysis of the environment is made and a model is synthesized and simulated. Implementation "is the actual doing of what was planned, using the selected tools and strategies" (Kaufman, 1972, p. 134). In the career education delivery system, the implementation stage begins with the establishment of "preconditions required for the new concepts to gain a footing" (Hoyt, Evans, Mackin, and Mangum, 1972, p. 149), and this involves seeing that a climate of readiness and support is established and maintained, as well as developing or obtaining equipment and materials, training personnel, arranging facilities, scheduling time, and providing needed finances. Implementation also involves the tryout of the various components of the

system, as well as testing the completed prototype before the total system is launched and maintained. Evaluation is the third function of the career education delivery system. Evaluation is concerned with determining how well the assessed needs have been met, and establishing the effectiveness of the system in achieving the performance objectives. Both formative and summative evaluations must be carried out. Variables are defined, effectiveness criteria are established, measurements taken, and results are interpreted and reported.

This paper is addressed primarily to the implementation of career education. However, due to the interrelatedness of planning, implementation, and evaluation in the actual provision of career education in the real-life situation, consideration will be given to planning and evaluating activities which most directly relate to implementation.

Relation of Implementation to Planning and Evaluation

Each function in the system can be identified and separated into its component parts, and the relationships within and between the major functions can be determined.

A model depicting the three major functions to be carried out in delivering career education, and the interrelatedness of these functions, is shown in Figure 1.

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Insert Figure 1 about here
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Inspection of the model in Figure 1 shows that each of the three major functions is comprised of three subsystems. Producing a model involves analysis of the real-life environment (1.1), synthesis of a model (1.2), and simulating to test the model (1.3). Implementation begins at the same time as model production, rather than after the model is completed,

as is often implied or suggested. Implementation involves preparing or getting ready to put the system into operation, actually starting the system operation, and, finally, maintaining on a continuing basis the operation of the system. The third function is evaluation, and this involves, first, defining variables to be evaluated, and then establishing criteria of effectiveness. After it has been determined just what is to be evaluated and what will constitute effectiveness criteria, the next task is to develop or obtain available instruments and techniques appropriate for measurement. Finally, the measurements are taken, results are analyzed, and findings are reported.

Effective implementation of a system depends on having strong relationships between the implementation subsystems and the subsystems in the two other major functions. Ryan (in press) has pointed out the importance of systematization in system design. This refers to the requirement of having strongly established relationships among the parts of a system. The analysis of the real life environment, which is carried out as a first step in producing a model, and the preparation for implementation are interrelated. Each of these activities depends on and contributes to the other. This is shown in the flowchart model (Figure 1) by the mutually reciprocal signal paths (1.1)⇄(2.1).

In preparing for implementation, data is collected and information is obtained which will be used in synthesizing the model (2.1)→(1.2). Furthermore, preparation for implementation involves getting ready for and providing funds to conduct the evaluation (2.1)→(3.0). The system cannot start (2.0) until the preparation for implementation has been completed (2.1) and the model has been synthesized (1.2), and simulated (1.3) until it has been freed of bugs and malfunctions. The dependence of system operation on prior preparation for implementation and completion

of the model is shown in the flowchart model (Figure 1) by the signal paths (2.1)→(2.2). (1.3)→

Simulation of the model involves the use of measurement techniques, perhaps a computer. This is shown by the signal path from (3.2) to (1.3). Thus, evaluation actually begins before the model is finished and continues throughout the life of the system. The variables to be evaluated and the criteria of effectiveness are spelled out in the synthesized model when goals and objectives are defined. This information is fed forward to the evaluation function (1.2)→(FF)→(3.1).

Maintenance of the system is accomplished by the continuous feedback from formative evaluations, thereby monitoring quality control and directing adjustments in the operating system. A closed loop is created as data from the operating system (2.3) is continuously fed to the measurement subsystem (3.3) where data is analyzed and results together with recommendations for modifications and continuance of existing operations are fed back to the operators (2.3). This closed loop is shown in the model in Figure 1 by the signal paths (2.3)→(3.3)→(F)→(2.3).

From the analysis of the relation of implementation to planning and evaluation, it can be seen that the activities involved in implementing career education depend on both planning and evaluation. For the career education delivery system to be effective, each of the three major functions must be working at optimum level, and the interactions or exchanges between implementation, planning, and evaluation must be taking place. In an analysis of the systems approach, Ryan (in press) has made it clear that a system in which any element is either missing or working at less than optimal level, or in which the necessary interactions are not taking place, will be seriously curtailed in operating effectiveness.

With this frame of reference it is possible now to look in detail at the implementation function. This will be accomplished by identifying the components which make up implementation, and describing each one.

Analysis of Career Education Implementation

The implementation of career education involves three major functions: preparation, initiation, and maintenance. Preparation involves getting ready to deliver career education. Initiation of the delivery system is made through pilot testing and field testing. Maintenance refers to full scale operation. Preparation must take place before initiation, and initiation must precede maintenance. Preparation for implementation is the most complicated, and in a sense the most critical. If adequate and systematic preparations are not carried out, there will be difficulties in initiating the system and subsequent problems in trying to maintain the system. Without adequate preparation, the chances of undue expense and untold problems at a later time are increased manyfold. A model of the implementation function is shown in Figure 2.

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Insert Figure 2 about here
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PREPARE FOR IMPLEMENTATION (2.1)

Inspection of Figure 2 shows that the first step in implementing career education is preparation (2.1). It also can be seen that there are eleven separate activities carried out in the course of preparing for implementation: conducting public relations, setting policy, organizing committees and staff, arranging community participation, arranging institutional participation, scheduling time, developing program guides, developing staff, developing or obtaining software and

hardware, and arranging facilities. These vitally important activities are closely related to each other, and also influence either directly or indirectly the activities involved in planning, as well as the evaluation of the system. To a large degree the success of implementation is related to the extent to which the various activities involved in the preparation stage are systematically carried out. Some activities should occur simultaneously. In some instances the relationship between activities is reciprocal; in other cases, it is sequential.

CONDUCT PUBLIC RELATIONS/INFORMATION SERVICE (2.1.1). It is doubtful if any career education delivery system can succeed without an adequate program of public relations and information service. A carefully planned promotional program should be organized and carried out to stimulate interest in career education, to make the public aware of the need for and the benefits to be derived from career education, to develop general understanding of the career education concept. An effective public relations program will present information through formal meetings, commercial television, local radio stations, and local newspapers. A concerted effort must be made to reach members of the local power structure on a person-to-person basis. Programs should be prepared and presented to groups of parents, employers, and community organizations. Each program should be specifically tailored for the target group to which it will be presented. The presentation of planned programs should incorporate utilization of audio-visual aids. The public relations program must be planned as a single function, implemented through a variety of strategies. This will insure that the same message is being conveyed through the various avenues, and avoid confusion which comes from having one message being given in one place and a different message being presented in another. It only creates confusion,

for example, if parents are given one concept of career education in a community program, and at the same time the local television station is presenting a different concept. It is essential for the planners of a career education system to be involved in the public relations program. Unless those who are responsible for producing the model actually take part in planning the public relations and information service program, there is no way to achieve effective public relations or to obtain the support career education must have to succeed.

In the model (Figure 2) the signal path from ESTABLISH CONCEPTUAL FRAMEWORK to CONDUCT PUBLIC RELATIONS/INFORMATION SEPVICE (1.1.1) ⟶ (2.1.1) established the relationship between the planners and the public relations program. The model also points to the continuing nature of public relations. It can be seen that one of the functions of the advisory committee is public relations (2.1.4.1 ⟶ 2.1.1). Since the committee is actively involved in the total system implementation, this means public relations will be going on all the time. It also can be seen that public relations involves community participation, and at the same time the extent to which members of the community become involved in career education depends to some extent on the effectiveness of the information service and the public relations program. This mutually reciprocal relationship is shown in the model by the signal paths (2.1.1) ⟷ (2.1.5).

An important purpose of the public relations program is to establish the kind of support base that is needed for getting enabling legislation and local policies enacted. In a systematically implemented career education program, the public relations function is carried out as a means to getting legislation enacted and policies set. In any situation, information will be communicated.

When this communication is unplanned there is apt to be a lot of misinformation reaching those in the power structure, and the results can seriously impede implementation of career education in that particular setting. The signal path, (2.1.1) → (2.1.2), establishes the sequence for conducting public relations as a prerequisite to establishing policy.

ESTABLISH ENABLING LEGISLATION/SET POLICY (2.1.2). Hoyt et al. (1974), in making a strong case for having legislation passed to support career education, identified nine aspects of the delivery system requiring some kind of legislative backing:

1. elementary, middle, secondary, post-secondary, and continuing education programs
2. business and industry programs
3. work-study programs
4. vocational guidance
5. placement
6. curriculum development and materials development
7. professional personnel development
8. parent education and homemaking
9. research and development

It is not sufficient to get legislation passed to support career education. It is equally important to have career education established as a high priority in the particular local setting. It is important for those involved in planning the system and producing a model for the system to take part in planning the strategy for getting needed legislation and policies established. The goals, subgoals, and objectives which are defined in the model must be compatible with the mission and must derive from the philosophy of the particular institution or agency.

This compatibility of institutional or agency mission and the career education delivery system goals is accomplished largely through having the planners, who know the conceptual framework for the model, involved in getting needed legislation and policy enacted. Hoyt et al. (1974) emphasize the fact that educational objectives derive from policy, which, in turn, is determined by boards, legislatures, or other governing bodies. It is important to have some kind of policy statement which establishes career education an an important part of the mission for the particular setting. Hoyt et al. (1974) give an example of the kind of policy statement which is needed:

> The people of the State of California do enact as follows:
>
> The Legislature hereby recognizes that it is the policy of the State of California to provide educational opportunity to every individual to the end that every student leaving school should be prepared to enter the world of work; that every student who graduates from any state-supported educational institution should have sufficient marketable skills for legitimate remunerative employment; and that every qualified and eligible adult citizen should be afforded an educational opportunity to become suitably employable in some remunerative field of employment. (p. 196)

Hoyt et al. (1974) also have presented a simply stated resolution of a local school district which exemplifies the kind of policy statement which is needed at the level of the institutional or local agency:

> We believe that it should be the policy of our school district to provide career education for all youths and adults of the district, to the end that no student drops out of school who is not prepared to enter the world of work, that no student graduates who does not have salable skills for productive work or college education, and that no adult is denied an educational opportunity to become properly employed.

The statements which are presented in the state law and the local school district resolution establish career education as a priority. They reflect a commitment to career education and give a sense of general direction. However, they do not establish the end product. These

are policy statements, not system goals or objectives. The goals and objectives, however, will be determined in part by what is set forth in the policy statements.

Another kind of enabling legislation is found in appropriation acts, in which funds are earmarked specifically to support the various components of career education. This is shown in the model (Figure 2) by the signal path (2.1.2) ⟶ (2.1.3).

ALLOCATE/PROVIDE FUNDS (2.1.3). There is probably no function in the preparation for implementation more critical than this one relating to the allocation and provision of financial support for the career education delivery system. In carrying out this function, costs are determined and all essential funding arrangements are made. Funding may come from a variety of sources. It is important for all funds to be determined in advance and requests or applications sent to appropriate funding sources well before the deadline dates. In the planning for funding, cost items should be assigned by category, thereby facilitating cost-benefit analyses. Funds will be required for conducting public relations, supporting committee activities, development of the career education program guide, staff development, hardware and software, and facilities. These elements are all part of the preparation for implementation. Funds also are needed to support the pilot and field testing which are done in initiating the system, as well as for actually operating the system. Funds must be budgeted to support both planning and evaluation functions.

Some kind of program guide or curriculum guide is needed for the delivery of career education. The development of such a guide is part of preparation for implementing the system, and this will require an adequate budget to support development activities. Special orientation

and training programs for those who will use the guides must be figured into the budget. In figuring the budget for training, it is important to allocate funds for stipends, travel, salaries, honoraria, materials, services, and facilities. Funds to either purchase or develop hardware and software to be used in implementing the system must be provided. All software, including staff training materials, evaluation forms, and curriculum materials, and all hardware, should be itemized and incorporated in the budget. Costs for textbooks, workbooks, pamphlets, manuals, and other essential publications should be calculated and included in the budget. It is important to calculate costs of implementation according to preparation, initiation, and maintenance categories. This will facilitate cost-benefit analyses.

When all costs have been determined, accounting procedures must be established. Two effective techniques which implement a system approach are Program Evaluation Review Technique (PERT), and Program Planning and Budgeting System (PPBS). A PERT cost diagram will provide an efficient way to account for costs in implementation. The PERT cost system should be used "to aid in development of a more realistic project estimate; to compare estimated and actual costs at any selected point in the program; to help determine the best allocation of resources to project activities; and to forecast total project costs based upon program cost position throughout the project" (Cook, 1966, p. 32).

The critical nature of the funding function in implementation of career education is pointed out in the flowchart model (Figure 2) which shows eight signal paths going out from the ALLOCATE/PROVIDE FUNDS function (2.1.3).

ESTABLISH ADVISORY COMMITTEE/ORGANIZE STAFF (2.1.4). A set of working committees and a program staff must be organized before career

education can be delivered. The organization of the advisory committee should follow the first stage of the public information program. It is foolhardy to appoint people to an advisory committee, unless they first know what the program is all about. This sequential relationship is shown in the flowchart model (Figure 2) by the signal path (2.1.1) → (2.1.4). After information about career education has reached the public in a particular area, then an organizational meeting can be called and invitations issued to delegates representing business, industry, labor, education, social services, corrections, civic groups, volunteer groups, special interest/minority groups, and the target learner groups. It is important that the agenda of this organizational meeting be the responsibility of those who are responsible for developing the career education delivery system model. The program should be devoted primarily to the presentation of the procedures and results of the analysis of the existing situation and the tentative structure of the coneptual framework. Statements of policy and documents of enabling legislation should be presented and explained. Hoyt et al. (1974) recommend the use of audio-visual aids as much as possible in the presentations given during this meeting. After an information input period, followed by a discussion period, the participants should be assigned to four groups: steering, institutional planning, community planning, and research. A chairman and recorder should be designated for each group, and a task assignment sheet should be given to each chairman. The task assignment sheet should state the purpose of the group, provide a list of tentative activities, give a timeline of activities and events. The task for each group will be to organize, define objectives implementing the stated purpose, and plan methods for achieving the objectives.

The major purpose of the four groups will be as follows:

1. Steering Committee. To provide support for the executive function through public relations, liaison with policy-making groups, advice about program development, and evaluation.

2. Institutional Planning Committee. To arrange institutional participation, contribute to synthesis of the model, and inventory of institutional resources.

3. Community Planning Committee. To arrange community participation, contribute to synthesis of the model, and inventory of community resources.

4. Research Committee. To contribute to development of the program guide, the delivery system model, and the staff development activities.

The steering committee functions as an executive body, providing general direction, coordinating activities, and reporting to official bodies and agencies inside and outside the setting. The steering committee provides advice to the program director who has the responsibility for and is accountable for implementing the delivery system.

The institutional committee works with institutional staff to introduce change into the existing program. This group must determine how career education can fit into the ongoing system. The members of this committee must take part in analysis of the existing programs and resources, and also should make suggestions for determining alternatives to achieve objectives of career education.

The community committee has an important part to play in the implementation of a career education system, since career education involves the liaison of institution and community. This committee must identify career education resources in the community that are outside

the institution, and provide for assessing these resources so they can be available as learning experiences. This committee must conduct the community census which is part of the analysis of the existing situation carried out in planning the system. This committee must classify and assess all volunteers and all learning resources in the community, and must also develop plans for utilizing the learning experiences which are outside the institution to achieve career education objectives.

The research committee is responsible for collecting information and reports on observations and assessments of the career education implementations in other settings, as well as the reported results of exemplary and experimental programs, research, and development projects.

The advisory committee is an important part of implementing career development. It is through this element that leadership and energy are provided to see that all the parts of the system are present and functioning at optimum level.

ARRANGE COMMUNITY PARTICIPATION (2.1.5). The delivery of career education in any setting requires active participation of the community. An essential prerequisite to the implementation of career education is the preparation of the community for its part in the system operation. This is achieved as subsystem (2.1.5) is carried out, and arrangements are made for various elements in the community to participate in the career education program. The community planning committee which was organized in (2.1.4.3) plays an active part in arranging community participation. One of the important functions of the committee is making an inventory of community resources, and marshalling these resources for the career education delivery system. It is important to identify available resources, and to describe ways in which a facility, person, hardware, or software might contribute to a career education experience.

The success of career education depends in large measure on the extent to which community resources are used to achieve career education goals. Sessions (1972) has made the point that it is not enough for organized labor to be involved in career education; rather, units of organized labor must actively participate in the program. This means that experiences and activities will be provided by community agencies, and much of the career education program will take place in the community.

For career education to be successful, it is essential that the delivery system be implemented in the context of cooperation and participation. The potential of career education can never be realized if local school systems, state agencies, or institutions attempt to work in isolation from each other or from other agencies in the community.

ARRANGE INSTITUTIONAL PARTICIPATION (2.1.6). The delivery of career education experiences to any group of learners will involve participation of the institution or agency in which the learners are enrolled, as well as the larger community. The institution could be a school, in which case the administration, instruction, and support services must take part in providing career education experiences to the learners. If the institution were a correctional facility, the administration, security, treatment, and prison industry would have to take an active part in providing awareness, exploration, and preparation experiences as well as engaging in placement and follow-up activities. The essential aspect in arranging institutional participation is getting a commitment from each department or functional unit to take part in providing career education to the individuals enrolled in the institution. One of the first things to do in getting institutional participation is to inventory the resources available in the institution or agency.

In arranging for institutional participation it is essential to bear in mind that implementation of career education does not require additional components within the existing educational system, but rather a conceptual change throughout the system (Hoyt, et al., 1974). The need is not so much for new personnel as for reorientation of the existing professional staff.

SCHEDULING TIME (2.1.7). Scheduling time is the translation of a plan into a timetable with calendar dates specified for starting and completing the various segments of the delivery system. In preparing for implementation a timetable must be worked out for getting the program guide developed, obtaining or developing hardware and software, training staff, and arranging for facilities. The timetable also must specify the target dates for pilot testing, field testing, and, finally, full scale operation. Each activity must be scheduled according to the time which will be required to complete it. Time which is allotted to an activity can be expanded or reduced, depending on the actual situation, as long as the outside time parameters are satisfied. After a time schedule has been prepared, a chart should be made to show the interrelationships among the various components and to give a picutre of the total operation against a timeline. Critical points should be identified, to insure that prerequisite activities are accomplished in time. Sufficient time should be allotted for each activity. A PERT/Time diagram can be used to establish a logical work breakdown structure against a time framework. A PERT diagram will identify events and activities. Events are outcomes which do not consume time or resources and which occur at specific points in time. Activities consist of work which must be performed before an event can occur. Activities consume time and resources.

DEVELOP PROGRAM GUIDE (2.1.8). In developing any new product a guide to its use should be produced so that those who use the product will be able to get the most from its use. Unless a product is used as the producers intended, it is not likely that the full potential will be derived from the product. Career education can be likened to a new product, and those who are to be involved in implementing the delivery system of career education need a guide to direct their activities. The model (1.2.4) is used to identify concepts to be expanded into modules of learning activities.

The career education program or curriculum guide, which presents the learning modules in an organized manner, should cover the theory or rationale behind career education, the conceptual frame of reference within which the delivery system model was developed. The guide should explain all the specific procedures involved in delivery of career education. It should indicate instruments of evaluation to be used and should emphasize the importance of feedback.

A career education guide should present the goals and subgoals to be implemented, and should give examples of learner objectives, together with descriptions of learning activities which could be used to achieve the different objectives. The learner objectives and learning experiences provided in the guide should be tried out on a sample of individuals like those who will constitute the learner group when the system is in operation. The guide should also contain supplementary information, such as directories of sources of career education hardware and software, references, and descriptions of commercially prepared career education materials.

RECRUIT/SELECT/DEVELOP STAFF (2.1.9). In implementing career education, staff recruitment and selection probably are not as critical as

staff development. Since career education is not an additional program, but rather a reconceptualization of an existing program, it is unlikely that there will be need for recruiting new staff other than someone responsible for coordinating the total system. The signal path (2.1.9)→(2.1.4.1) shows that program staff working with the steering committee should be selected carefully. It is important that anyone with responsibility for coordinating the total system be thoroughly familiar with career education concepts and enthusiastic about the potential benefits to be derived from implementation of the system.

Staff training is a critical function, and the success of implementing career education depends in large measure on the way in which this function is carried out. Staff involved in pilot and field testing, as well as those who will be actually responsible for installation and maintenance of the system will be working with materials and equipment, using methods and techniques of presentation, employing modes of thought and concepts which are new. To insure the effective utilization of the materials, training and orientation procedures must be initiated. The orientation should reassure the staff person of his or her role in the delivery system, and give a broad overview of the career education system. Training should be provided at two levels: basic and advanced. In the basic training participants should develop their capabilities for using new materials and techniques, should expand their vision of the environment in which career education takes place, and develop a thorough understanding of the conceptual framework for career education and the nature of the career education delivery system. Career education relies heavily on individualization of instruction. Most staff members will need training in diagnosing needs of individuals and prescribing appropriate learning experiences to contribute to the

career development of the individual. Staff members need to know the relationships of career education to other programs, and must acquire skills for infusing career education experiences into all aspects of the educational system. Advanced training should be primarily training for leadership roles. Ideally advanced training should follow closely after basic training. This makes it possible to build on the new knowledge and skills which were developed in the basic program. If too much time elapses after the basic training has been completed, time will have to be devoted to review and relearning. Selection of participants for advanced training is extremely important. Those selected should be from among those who completed the basic program successfully, and selection should be made in terms of demonstrated potential for implementing leadership roles. In the advanced program it is important to have a cross section of participants coming from a variety of settings. Hoyt et al. (1974) have stressed the importance of providing for cross fertilization of ideas and the interchange of successful methods and experiences. The basic program can use the seminar, workshop, or institute format. The advanced program should include an internship experience, in addition to the seminar or workshop. From the pool of individuals having participated in the training program, teams of trainers can be constituted to provide continuing in-service training to staff members of any given institution or agency. The basic training can be given on a regional basis, and the advanced training should be arranged for a central location within a state with representatives from each of the regions participating. This will result in training teams comprised of a team leader, who has participated in both basic and advanced training, and two or three team members from the basic program. These training teams can design training systems for

local settings and deliver this kind of career education training through a variety of formats, including the mini-workshop or seminar, weekend retreats, or regular staff meetings.

Staff development for a career education delivery system also requires orientation for personnel outside the institution or agency. Hoyt et al. (1974) have pointed out that administrators, counselors, teachers, coordinators, and community workers are key persons in the implementation of career education. Some orientation must be provided to administrators, support personnel, community leaders, and parents. University teacher trainers must be oriented to career education. Preparation programs for teachers, counselors, and administrators must integrate career education concepts and methods into their respective pre- and in-service curricula (Gysbers, et al., 1974).

The nature of career education is such that no individual in any institution or agency can be considered outside the system, and many outside the institution or agency must be considered inside the system. Parents and family members must be informed of the intent of the system. Members of governing boards, legislators, and those in the power structure must be informed. In the flowchart model (Figure 2) this relationship between staff development and the information service is shown by the signal path (2.1.9) → (2.1.1). Orientation of parents, family members and community groups can be made through letter, meetings, and television. The training function also must reach those who are involved in planning the system and developing the delivery system model, as well as those with evaluation responsibilities. The flowchart model (Figure 2) shows these relationships in the signal paths going from (2.1.9) to (1.1.1) and (3.0). The time schedule for staff development must be worked out early in the process of preparing for implementation.

The schedule must provide an integrated sequencing of basic and advanced training, which must precede the time set for initiation of the system. Staff training also must be part of efforts to develop hardware and software and in the development of the program guide. The time schedule for training should be such that eventually each person involved in the delivery of career education will have the knowledge and skills for implementing his or her role in the delivery system.

DEVELOP/OBTAIN SOFTWARE/HARDWARE (2.1.10). A vitally important part of making preparations for implementation is the development of materials to be used in providing experiences of awareness, exploration, and preparation. It ordinarily is not necessary to develop hardware, as this most likely can be obtained commercially. It also is possible that much of the commercially available software can be used. However, there probably will be need to develop some materials designed especially for the target learner group. The model (1.2.4) is used in developing materials and selecting hardware. The program guide (2.1.8) also is used, since the guide contains description of various learning activities involving use of hardware/software combination. The materials which are developed are contained in the listing of career education materials presented in the guide.

All materials must go through the developmental stages of exploration or simulation, pilot testing, and field testing, with revisions based on feedback from the testing runs. Since the career education concept was introduced in the U. S. Office of Education, a multitude of new educational products has been produced. Some of these materials have been subjected to rigorous validation procedures, and others have had only limited testing. Extensive testing and evaluation are not essential to the development of all career education products. In some

instances, one demonstration of the product's capability for attaining particular career education objectives may be sufficient. It often is possible to perform a cost-benefit analysis of product use with a relatively small, isolated group, just as reliably as with a large group spread over a wide geographic area.

ARRANGE FACILITIES/SITES (2.1.11). Arrangements must be made for test sites and facilities, as well as for the eventual installation of the career education system in the various institutions in a given situation.

A number of variables need to be considered in selecting sites for testing components as well as the total system. Geographic considerations should be made in selecting test sites. If the career education system is being designed for a localized target population, then the system components will be tested over a considerably smaller geographic area than when the system is designed for widespread, general use. In cases where the system involves use of large, expensive pieces of hardware, the cost of transportation, installation, and maintenance can make it unfeasible to have widely dispersed test sites. It is important to consider the availability of technical assistance, both human and mechanical resources, during testing and subsequently when the system is in full-scale operation.

The time sequence for installing the career education delivery system in a number of settings must be considered carefully. It is important in working out the time schedule to prepare a plan which will provide for building on success. The sites selected for the early installation should be those with a history of openness to new ideas, where initial staff development will preceded the actual operation of the career education program, and where staff morale is high.

INITIATE SYSTEM (2.2)

Many of the preparations for implementation must take place before the system can be initiated. Some of the activities involved in preparing for implementation involve the testing functions which are carried out in the initiation stage. Initiation of the career education delivery system is concerned primarily with pilot testing and field testing.

CONDUCT PILOT TEST (2.2.1). There are two parts to pilot testing the career education delivery system. The first step is the developmental testing of the various segments of the system. In pilot testing, preliminary validation of the various segments of the prototype is made, and attention is directed to determining the most efficient presentation of sequences for achieving the objectives and the best combinations of the elements in the system. In the first part of pilot testing, each component is checked and revised according to feedback from the test. This is shown in the flowchart model (Figure 2) by the feedback signal path from (2.2.1) to (2.1). Before trying out the career education system as a whole, tests will be carried out to see if changes are needed in the public relations and information service (2.1.1); if new policy or legislation is required (2.1.2); if changes in the budget are needed (2.1.3); if the working committees or program staff should be changed (2.1.4); if changes in arrangements for community participation (2.1.5) and institutional participation (2.1.6) are needed; if changes are needed in the program guide (2.1.8); if adjustments are needed in the time schedule (2.1.7); if modifications are needed in the staff development program (2.1.9); if new materials are needed or changes are needed in the materials which were produced to implement the guide (2.1.10); and if adjustments are needed in the plan for installing the system in various locations (2.1.11). It is important

in carrying out the pilot test, which will involve only a limited sample of learners, to select the sample with care. If the career education system is to include the disadvantaged in the learner population, the pilot test still can be done primarily at sites with largely middle class learners, and only a small pilot run on a few disadvantaged learners. If the system is to be used with a broad, general population, the sites for the pilot test should be analyzed in terms of such variables as ethnic composition, maturity of learners, socioeconomic status of learners. Any site selected for pilot testing should be fairly typical of the sites where the career education system ultimately will be installed.

CONDUCT FIELD TEST (2.2.2). The next step in initiating the system is field testing. The objectives are to determine the usefulness and viability of the career education delivery system in a natural environment, like that in which the system will be maintained. In field testing consideration is given to measuring effectiveness, costs, endurance, and potential in a real-life situation. The successful functioning of a completely assembled delivery system in a natural environment is a substantial empirical proof of a viable and useful system. The field testing of a delivery system of career education will provide a basis for comparing the system in one particular setting with career education systems in other settings.

In pilot testing (2.2.1) segments of the newly developed prototypical system are tested and evaluated individually to determine their particular viabilities and also to establish the potential value of the system as a whole. The segments are integrated into a working approximation of the complete system, and then tested to establish whether or not the subsystems which worked well separately also can function

efficiently when synthesized into a whole.

Field testing, on the other hand, is designed to tryout and to evaluate the entire system under conditions as near as possible to the operational conditions which will prevail when the system is installed and maintained. This testing is done on a relatively large scale in a natural environment. The field testing of a career education delivery system should make clear the correlation of particular learning experiences with identifiable behavioral changes. In the field tests differential effects of the career education program should be revealed, since these tests will take into account the range of individual differences in the learner group as well as the staff. It is possible that some parts of the program can be effective with some learner groups, but not with others.

If the full capabilities of a career education program are to be ascertained, the field test should be made in a number of highly responsive, enthusiastic, innovative settings. An effort also should be made to include some of the less innovative settings in the array of test sites, to see how well the system can function under less than optimal conditions. There is a relationship between evaluation and both pilot and field testing. This is shown in the model (Figure 2) by the signal path (3.0) ⟶ (2.2).

Field testing is the final essential step in the development and validation process prior to putting the system into full-scale operation.

MAINTAIN SYSTEM (2.3)

Once the career education program has been field tested and any suggested revisions have been made, then it can be installed and operated on a continuing basis. In maintaining the system, there must be

a closed loop from system operation to evaluation, to provide continuous feedback and direct adjustments in the operating system. This is shown in the model (Figure 2) by the signal paths (2.3.1) → (3.3) (3.3) → (F) → (2.3.1).

INSTALL SYSTEM (2.3.1). Installing the career education program in any given setting takes place according to the predetermined time schedule (2.1.7). It is important that preliminary groundwork be carried out so the environment is receptive. A sure way to force the failure of a career education system is to mandate installation from the top down. A carefully planned and instituted system of information dissemination and public relations (1.3.1) is a prerequisite to career education installation (3.1.1) in any setting.

The staff must be prepared for their respective roles in delivery of career education experiences before installing the program in any particular location. It will do little if any good to mail career education curriculum guides on a wholesale basis with an administrative order to install the curriculum. Installation of career education requires an enthusiastic staff whose members believe in career education and appreciate the implications and benefits both for themselves and for the learners in their particular setting.

OPERATE SYSTEM (2.3.2). Once the career education system is installed in a particular setting, then the operations must be carried out on a continuing basis with experiences of awareness, exploration, and preparation being provided, and placement and follow-up activities taking place. The system operation represents the interfacing of learners, staff, and program. Operation of the program and evaluation occur simultaneously, and evaluative feedback is channeled back to direct changes in the operating system.

In a considered analysis of evaluation, Stufflebeam (1968) stated, "The objective of process evaluation is to detect or predict, during the implementation stages, defects in the procedural design or its implementation. The overall strategy is to identify and monitor, on a continuing basis, the potential sources of failure in a project. These include interpersonal relationships among staff and students; communication channels; logistics; understanding of and agreement with the intent of the program by persons involved in and affected by it; adequacy of the resources, physical facilities, staff, and time schedule" (p. 10).

Conclusions

This model of career education implementation, defines three major functions which constitute the essential elements in the implementation process. The model emphasizes the interrelatedness of implementation to both planning and evaluation of career education. The model, assuming a foundation of local initiative fostered and reinforced at regional and national levels, provides a viable means of realizing the personal and social potential of career education in any setting.

References

Cook, D. L. Program evaluation and review technique. (Cooperative Research Monograph 17, U. S. Department of Education Publication No. 12024). Washington, D. C.: U. S. Government Printing Office, 1966.

Gysbers, N. C., Magnuson, C., & Moore, E. J. Career education concepts, methods, and processes for pre- and in-service education. Journal of Career Education, 1974, 1, 25-37.

Hoyt, K. B., Evans, R. N., Mackin, E. F., & Mangum, G. L. Career education: What it is and how to do it. (2nd ed.) Salt Lake City: Olympus Publishing Co., 1974.

Kaufman, R. A. Educational system planning. Englewood Cliffs, N. J.: Prentice Hall, 1972.

Ryan, T. A. Analysis of the systems approach. In P. J. Sleeman & S. D. Zalatimo (Eds.), A systems approach to learning environments, in press.

Ryan, T. A. A systems approach to career education. Vocational Guidance Quarterly, 1974, 22(3), 172-79.

Sessions, J. Labor, career education, and correction. In T. A. Ryan (Ed.), Career education in corrections: Proceedings of a national work conference. Honolulu: Education Research and Development Center, University of Hawaii, 1972.

Stufflebeam, D. L. Evaluation as enlightenment for decison-making. Washington: National Education Association, 1968.